

### AMENDMENTS TO THE CLAIMS

1. (**Currently amended**) A method of ~~maintaining bandwidth capacity of a network~~ comprising:

~~defining~~ determining one or more future times at ~~for~~ which a bandwidth capacity of the network is evaluated;

~~determining~~ [[a]] total bandwidth capacity capacities of the network (TNC) at ~~each of the~~ respective future times;

~~determining~~ [[a]] total demand demands of users (TUD) for the network at ~~each of the~~ respective future times;

~~determining, by a processor, a~~ computing device, predicted utilization (PU) ~~utilizations~~ of the network at ~~each of the~~ respective future times as a ~~function~~ functions of the ~~corresponding~~ total demand demand demands of users (TUD) and the ~~corresponding~~ total bandwidth capacity capacities of the network (TNC);

~~determining~~ defining a respective maximum acceptable utilization and a minimum acceptable utilization of the network at each of the utilizations of the network for the respective future times;

~~comparing, by a processor, the~~ computing device, respective predicted utilization (PU) utilizations of the network to the ~~corresponding~~ maximum and minimum acceptable utilization utilizations of the network at ~~each of~~ for the future times;

~~based upon said comparing, defining an adjusted predicted utilization (APU) at each of the future times, said defined APU being between the maximum and minimum acceptable utilization of the network;~~

~~determining, for~~ respective future times, ~~each future time, a change~~ changes in total network bandwidth capacity (DCNC) capacity to be applied to the network in order to increase ~~or decrease~~ the total bandwidth capacity of the network based at least partly on said comparing of respective predicted utilizations of the network to maintain the defined APU corresponding maximum acceptable utilizations;

~~determining at each of the, for~~ respective future times, [[a]] lead time times for adding a product for applying one or more products for providing the determined DCNC ~~to the~~ changes in total network bandwidth capacity, wherein the lead time ~~indicates an~~

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~~amount~~ times indicate respective amounts of time needed for delivery and installation of ~~purchased DCNC~~ the one or more products; and

~~applying initiating~~ the determined ~~DCNC~~ changes in total network bandwidth capacity in advance of ~~each of the~~ respective future times by at least the determined based ~~on the corresponding lead time determined with respect to the future times.~~

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Currently amended) The method of claim 1 wherein determining ~~[[a]]~~ total bandwidth capacity ~~capacities~~ of the network (TNC) ~~at each of the~~ respective future times is a function of comprises determining ~~[[a]]~~ present bandwidth capacity ~~capacities~~ of the network (PNC) and identifying ~~[[a]]~~ planned changes in network bandwidth capacity (PCNC) to be applied to the network between a present time and ~~each of the~~ respective future times.

7. (Currently amended) The method of claim 1 wherein determining, for respective future times, changes ~~a change in~~ total network bandwidth capacity ~~capacities~~ (DCNC) ~~is comprises determining the changes in the total network bandwidth capacities based on at least a function of one or more of the following: a current utilization (CU) of the network, a growth trend of a utilization of the network, or a cost measure of a bandwidth capacity to be added to the network.~~

8. (Currently amended) The method of claim 7 wherein ~~said the~~ current utilization (CU) of the network is indicative of a high percent usage of a present bandwidth capacity of the network (PNC) for a particular percentage of time.

9. (Original) The method of claim 7 wherein the growth trend is based on a regression of data representative of a past growth of the utilization of the network.

10. (Currently amended) The method of claim 1 wherein said determining, by the computing device, predicted utilizations of the network comprises determining the ~~[[a]]~~ total demands of users (TUD) for the network at ~~each of the~~ respective future times is as a function of at least determining a present demand of users (PUD) for the network and determining a change

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in demand of users (~~CUD~~) for the network between a present time and ~~each of the~~ respective future times.

11. (**Currently amended**) The method of claim 10 wherein ~~determining an the~~ anticipated change in demand of users (~~CUD~~) for the network comprises determining a demand requirement for a roll-out of an application operating via the network.

12. (**Currently amended**) The method of claim 1 wherein said determining, by the computing device, the [[a]] predicted utilizations (~~PU~~) of the network at each of the respective future times comprises dividing the total demands of users (~~TUD~~) for the network by the total bandwidth ~~capacity capacities~~ of the network (~~TNC~~) at each of the respective future times.

13. (**Currently amended**) The method of claim 1 wherein the maximum acceptable utilizations for the respective future times of the network is a function of a response time of an application operating via the network.

14. (**Currently amended**) The method of claim 13 wherein the response time of the application is a function of one or more of the following: a distance between a client and a server of the application wherein ~~said the~~ client and server are coupled to the network, a connection speed of the client to the network, or a utilization of the network during a period of time at which the client accesses the application.

15. (**Currently amended**) The method of claim 1 further comprising:

planning a budget for applying the determined changes in total network bandwidth capacity (~~DCNC~~) to the network; and

determining a cost measure of the determined changes in network bandwidth capacity (~~DCNC~~).

16. (**Canceled**)

17. (**Currently amended**) A system ~~to maintain bandwidth capacity of a network, said system comprising:~~

a processor configured to execute computer-executable instructions in order to cause the system to perform operations comprising:

define-determining a future time times at for which a bandwidth capacity of the network is evaluated;

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determining[[e]] a total bandwidth capacity of the network (TNC) at each of the future time times;

determining[[e]] a total demand of users (TUD) for the network at each of the future time times;

determining[[e]] a predicted utilization (PU) of the network at each of the future time times as a function of the total demand of users (TUD) and the total bandwidth capacity of the network (TNC);

~~define-determining~~ a maximum acceptable utilization and ~~minimum acceptable utilization~~ of the network at each of for the future times time;

comparing[[e]] the predicted utilization (PU) of the network to the maximum and ~~minimum acceptable utilization~~ of the network at each of the future times time;

~~define an adjusted predicted utilization (APU) at each of the future times, said defined APU being between the maximum and minimum acceptable utilization of the network;~~

determining[[e]], for each the future time, a change in total network bandwidth capacity (~~DCNC~~) to be applied to the network in order to increase ~~or decrease~~ the total bandwidth capacity of the network to maintain the defined APU based at least partly on said comparing of the predicted utilization of the network to the maximum acceptable utilization;

determining[[e]], for at each of the future times time, a lead time for adding a one or more products for applying to provide the determined ~~DCNC change in total network bandwidth capacity~~ to the network, wherein the lead time indicates an amount of time needed for ~~delivery and installation of purchased DCNC~~ procuring the one or more products; and

apply scheduling the procurement of the one or more products determined DCNC in advance of each of the future time times by at least the determined ~~based on the lead time determined with respect to the future times.~~

18. (Canceled)

19. (Canceled)

20. (Canceled)

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21. (Canceled)

22. (Currently amended) The system of claim 17 wherein said ~~computer-executable instructions to determining~~[[e a]] the total bandwidth capacity of the network (TNC) ~~at each of the future times~~ time comprises ~~computer-executable instructions to determining~~[[e]] a present bandwidth capacity of the network (PNC) ~~and to identifying~~ a planned change in network bandwidth capacity (PCNC) ~~to be applied to the network between a present time and each of the future times~~ time.

23. (Currently amended) The system of claim 17 wherein said ~~computer-executable instructions to determining~~[[e]] a change in network bandwidth capacity (DCNC) ~~comprises computer-executable instructions to determining~~[[e]] one or more of the following: a current utilization (CU) of the network, a growth trend of a utilization of the network, or a cost measure of a bandwidth capacity to be added to the network.

24. (Currently amended) The system of claim 23 wherein said ~~the~~ current utilization (CU) of the network is indicative of a high percent usage of a present bandwidth capacity of the network (PNC) for a particular percentage of time.

25. (Original) The system of claim 23 wherein the growth trend is based on a regression of data representative of a past growth of the utilization of the network.

26. (Currently amended) The system of claim 17 wherein said ~~computer-executable instructions to determining~~[[e]] a total demand of users (TUD) for the network ~~at each of the future times~~ time comprises ~~computer-executable instructions to determining~~[[e]] a present demand of users (PUD) for the network ~~and to determining~~[[e]] an anticipated change in demand of users (CUD) for the network between a present time and ~~each of the future times~~ time.

27. (Currently amended) The system of claim 26 wherein said ~~computer-executable instructions to determining~~[[e]] an anticipated change in demand of users (CUD) for the network comprises ~~computer-executable instructions to determining~~[[e]] a demand requirement for a roll-out of an application operating via the network.

28. (Currently amended) The system of claim 17 wherein said ~~computer-executable instructions to determining~~[[e]] a predicted utilization (PU) of the network ~~at each of the future times~~ time comprises ~~computer-executable instructions to dividing~~[[e]] the total demand of users

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~~(TUD)~~ for the network by the total bandwidth capacity of the network ~~(TNC)~~ at ~~each of the~~ future ~~times~~ time.

29. **(Original)** The system of claim 17 wherein the acceptable utilization of the network is a function of a response time of an application operating via the network.

30. **(Currently amended)** The system of claim 29 wherein the response time of the application is a function of one or more of the following: a distance between a client and a server of the application wherein ~~said the~~ client and server are coupled to the network, a connection speed of the client to the network, or a utilization of the network during a period of time at which the client accesses the application.

31. **(Currently amended)** The system of claim 30 ~~further comprising computer-executable instructions to~~ wherein the operations further comprise planning a budget for applying the determined change in network bandwidth capacity ~~(DCNC)~~ to the network and to determining ~~[[e]]~~ a cost measure of the determined change in network bandwidth capacity ~~(DCNC)~~.

32. **(Currently amended)** A tangible computer-readable storage medium computing system with a processor having stored thereon computer-executable instructions that, in response to execution by a computing device, cause the computing device to perform operations to perform a method to maintain bandwidth capacity of a network, the method comprising:

defining-determining a future times time at for which a bandwidth capacity of the network is evaluated;

determining a total bandwidth capacity of the network ~~(TNC)~~ at ~~each of the~~ future time times;

determining a total demand ~~of users (TUD)~~ for the network at ~~each of the~~ future time times;

determining a predicted utilization ~~(PU)~~ of the network at ~~each of the~~ future time times as a function of the total demand ~~of users (TUD)~~ and the total bandwidth capacity of the network ~~(TNC)~~;

defining-determining a maximum acceptable utilization and a minimum acceptable utilization of the network at each of the future time times;

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~~comparing the predicted utilization (PU) of the network to the maximum and minimum acceptable utilization of the network at each of the future times;~~

~~based on said comparing, defining an adjusted predicted utilization (APU) at each of the future times, said defined APU being between the maximum and minimum acceptable utilization of the network;~~

~~determining, for each the future time, a change in total network bandwidth capacity (DCNC) to be applied to the network in order to increase or decrease the total bandwidth capacity of the network, to maintain the defined APU the change based at least partly on a difference between the predicted utilization of the network and the maximum acceptable utilization;~~

~~determining at each of the future times time a lead time for adding one or more a products for applying providing the determined change in total network bandwidth capacity (DCNC) to the network, the lead time indicating an amount of time needed to procure the one or more products; and~~

~~initiating procurement of the one or more products applying the determined DCNC in advance of each of the future time by at least the determined lead time times based on the lead time determined with respect to the future times.~~

33. (Canceled)

34. (Canceled)

35. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 34 wherein the lead time is a function of an installation time for installing said the one or more products and an advance purchase time for obtaining said the one or more products.

36. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 32 wherein said determining a the total bandwidth capacity of the network (TNC) at each of the future times time comprises: is a function of

determining a present bandwidth capacity of the network; (PNC) and

identifying a planned change in network bandwidth capacity (PCNC) to be applied the network between a present time and each of the future times time.

37. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 32 wherein said determining, for the future time, the a-change in network bandwidth capacity (DCNC) is a function of utilizes one or more of the following: a current utilization (CU) of the network, a growth trend of a utilization of the network, or a cost measure of a bandwidth capacity to be added to the network.

38. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 32 wherein said determining [[a]] the total demand of users (TUD) for the network at each of the future times time is a function of comprises:

determining a present demand of users (PUD) for the network; and

determining a change in demand of users (CUD) for the network between a present time and each of the future times time.

39. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 32 wherein said determining a the predicted utilization (PU) of the network at each of the future times time comprises dividing the total demand of users (TUD) for the network by the total bandwidth capacity of the network (TNC) at each of the future times time.

40. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 32 wherein the acceptable utilization of the network is a function of a response time of an application operating via the network.

41. (Currently amended) The tangible computer-readable storage medium computing system with a processor of claim 32 wherein the method operations further comprises:

planning a budget for applying the determined change in network bandwidth capacity (DCNC) to the network; and

determining a cost measure of the determined change in network bandwidth capacity (DCNC).

42. (Currently amended) The method of claim 15 wherein said determining a the cost measure of the determined change in network bandwidth capacity comprises determining a monetary cost measure of the determined change in network bandwidth capacity by analyzing past trends of cost increases or decreases for networks of similar size, distance, and location.



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43. **(Currently amended)** The method of claim 1 wherein the one or more future times are on fixed time intervals.

44. **(Canceled)** ~~The system of claim 17 wherein the future times are on fixed time intervals.~~

45. **(Canceled)** ~~The computing system of claim 32 wherein the future times are on fixed time intervals.~~

46. **(New)** The method of claim 1, further comprising determining the change in total network bandwidth capacity at least partly based on an amount of time the network is over utilized.

47. **(New)** The method of claim 45, wherein the change in total network bandwidth capacity is substantially zero if the network is over-utilized below a first amount of time during an evaluation time period.

48. **(New)** The method of claim 46, wherein the first amount of time is less than a majority of the evaluation time period.